IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In Re Application of:	)	
	)	
AKERS, Douglas, W.	)	Examiner: Palabrica, R.J.
	)	
Serial No. 10/788,743	)	
	)	Group Art Unit: 3663
Filing Date: February 25, 2004	)	
	)	
For: METHOD FOR ON-LINE EVALUATION OF MATERIALS USING PROMPT GAMMA RAY ANALYSIS	)	Confirmation No.: 6111
	)	
Atty Dkt: B-200	)	

RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF UNDER 37 CFR 41.37

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office communication dated October 12, 2006, the appellant resubmits herewith replacement sections for the status of claims and the summary of claimed subject matter in accordance with MPEP 1205.03. The appellant notes that the revisions requested by the examiner did not change the pagination of the appeal brief and these replacement pages can be inserted in the appeal brief without changing the page number of the remaining pages.

The appellant thanks the examiner for pointing out that the status of cancelled claims was not included in the status of claims. The replacement section for the status of claims now includes the cancelled claims.

With respect to the summary of the claimed subject matter, the appellant addresses each of the examiner's specific objections as follows:

1. With respect to claim 1, the examiner objected to inclusion of reference numerals 226, 212 and 218 as not reflected in the cited figures. The appellant thanks the examiner for pointing out that reference numeral 226 was inadvertently omitted from Fig. 9 and that the "2" in front of reference numeral 12 in Fig. 8 was also inadvertently omitted. These typographical errors will be corrected by submitting corrected drawings to conform to the specification at the appropriate time. The appellant is not sure as to the examiner's objection regarding reference numeral 218. As indicated in the summary of the claimed subject matter of claim 1, reference numeral 218 appears in cited Fig. 8.

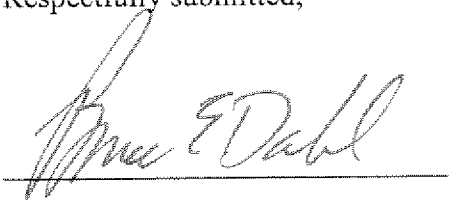
2. With respect to claim 1, the appellant thanks the examiner for pointing out that reference numeral 118 was omitted. This omission has been corrected in claim 1 and elsewhere in the summary of claimed subject matter.

3. With respect to claim 1, the examiner objected that reference numeral 20 was not cited in reference to the claim term, "positron annihilation data." The appellant is unsure as to examiner's objection. Reference numeral 20 refers to "prompt gamma ray data" which is a claim term separate from "positron annihilation data." Thus, reference numeral 20 has been included in the summary of claimed subject matter where the claim term, "prompt gamma ray data" appears, such as in claims 2 and 13.

4. With respect to claim 12, the examiner objected that the figures associated with reference numbers 22, 122, and 222, as well as 225 were not referenced. The appellant has now listed Fig. 8 associated with 225 in claim 12. The appellant is unsure as to the examiner's objection with respect to reference numerals 22, 122, and 222. Figs. 1, 4, and 7-9 contain these numbers and were referenced in connection with "positron annihilation data" in claim 12.

Therefore, appellant requests that the examiner reconsider and withdraw the grounds for non-compliance especially in light of appellant's revisions to the status of claims and summary of claimed subject matter.

Respectfully submitted,



Bruce E. Dahl, Esq.
Attorney for Appellants
PTO Registration No. 33,670
DAHL & CHETLIN, LLC
555 17th Street, Suite 3405
Denver, CO 80202
(303) 291-3200

Date: November 3, 2006

STATUS OF THE CLAIMS

Claims 1-10, 12-19 and 21-23 are pending in the application. Claims 11, 20 and 24 are cancelled. Claims 1-10, 12-19 and 21-23 currently stand rejected. The rejections of claims 1-10, 12-19 and 21-23 are appealed.

In the present application, the examiner provisionally rejected claim 2 under the judicially-created doctrine of double patenting over claim 3 of co-pending divisional application, serial no. 10/383,096. The appellant did not traverse this provisional rejection and has agreed to file the appropriate terminal disclaimer in the appropriate application at the appropriate time (i.e., upon the indication of allowance of either claim 2 in this application or claim 3 of the co-pending application).

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to a method for evaluating a material specimen by bombarding it with neutrons to create prompt gamma rays. The invention as claimed is summarized below with reference to the independent claims and claims separately argued. Claims 1 and 12 are independent claims. Claims 2, 13-19, 21 and 23 are dependent claims argued separately. The claims contain reference numerals and reference to the specification and drawings. All references are shown in the application at least where indicated herein.

1. A method (226; Fig. 9; ¶72) for evaluating a material specimen (12, 112, 212; Figs. 1, 7-9; ¶¶23-31, 33-34, 37-40, 43, 47, 50-53, 055-57, 59-63, 66, 68-69, 71-75, 77), comprising:

mounting (228, Fig. 9; ¶¶37, 59-61, 72-74, 77) a neutron source (14, 54, 114, 214, 254; Figs. 1, 7-9; ¶¶23-30, 32-34, 36-37, 50, 52, 56-63, 72-74, 77) adjacent the material specimen (12, 112, 212);

mounting (Fig. 9; ¶¶ 38, 40, 66-69) a detector (16, 30, 32, 116, 130, 216, 230; Figs. 1, 4, 6-9; ¶¶23-24, 36, 38-42, 44-46, 49, 52-54, 56, 60, 65-72, 74-77) adjacent the material specimen (12, 112, 212);

bombarding (232; Fig. 9; ¶¶23-24, 30-31, 34, 37, 50, 56, 59-61,73) the material specimen (12, 112, 212) with neutrons (Figs. 1, 7-9; ¶¶30-34, 37, 50, 52, 56-63, 73) from the neutron source (14, 114, 214) to create prompt gamma rays (Figs. 1, 7-9; ¶¶23-24, 27, 30, 34, 37-39, 41, 43-45, 49-53, 57, 60-61, 63, 66-67) within the material specimen (12, 112, 212), some of the prompt gamma rays being emitted from the material specimen (12, 112, 212), some of the prompt gamma rays resulting in the formation of positrons (Figs. 1, 7-9; ¶¶23-25, 27, 30-31, 34, 37, 43, 50-52, 56-57, 60-61, 63) within the material specimen

(12, 112, 212) by pair production (18, 118, 218; Figs. 1, 7-9; ¶¶23, 28, 30-31, 37, 50, 52, 57, 60-61, 63);

collecting (70, 82, 234; Figs. 3, 6, 9; ¶75) positron annihilation data (22, 122, 222; Figs. 1, 3, 4, 6-9; ¶¶ 38, 42-45, 49, 53-54, 67, 70-71, 75-77) by detecting with the detector (16, 30, 32, 116, 130, 216, 230) a plurality of emitted annihilation gamma rays (Figs. 1, 7-9); ¶¶23-24, 30, 38-39, 41, 43, 45, 51-53, 57, 66-67) resulting from the annihilation (¶¶24, 30, 43-44, 57) of positrons, the detector (16, 30, 32, 116, 130, 216, 230) producing the positron annihilation data (22, 122, 222);

processing (84, 236; Figs. 6, 9; ¶¶26, 42, 47, 49, 53-54, 67, 70, 75, 77) collected positron annihilation data (22, 122, 222) in accordance with a Doppler-broadening algorithm (40; Figs. 2, 6; ¶¶26-27, 38, 42, 47-49, 51, 70, 75); and

continuing (238; Fig. 9; ¶75-76) to collect and process positron annihilation data (22, 122, 222) to measure an accumulation of lattice damage (¶¶24-26, 43, 47, 60-61, 67-69, 71, 74, 77) over time.

2. The method of claim 1, further comprising:

collecting (234; Fig. 9, ¶75-76) prompt gamma ray data (20, 120, 220; Figs. 1, 4, 7-9, ¶¶24-25, 38, 42-45, 49, 53-54, 67, 70-71, 75-77) by detecting with the detector (16, 30, 32, 116, 130, 216, 230) a plurality of emitted prompt gamma rays (Figs. 1, 7-9; ¶¶23-24, 27, 30, 34, 37-39, 41, 43-45, 49-53, 57, 60-61, 63, 66-67), the detector (16, 30, 32, 116, 130, 216, 230) producing the prompt gamma ray data (20, 120, 220);

calculating (72; Fig. 3; ¶¶25, 42-46, 51, 70) positron lifetime data (¶¶25, 27, 42-46, 51, 53, 70) from the positron annihilation data (22, 122, 222) and the prompt gamma ray data (20, 120, 220); and

continuing (238; Fig. 9; ¶¶75-76) to collect positron annihilation data (22, 122, 222) and prompt gamma ray data (20, 120, 220) and calculate (72) positron lifetime data to measure an accumulation of lattice damage over time.

12. A method for evaluating a material specimen (12, 112, 212; Figs. 1, 7-9; ¶¶23-31, 33-34, 37-40, 43, 47, 50-53, 055-57, 59-63, 66, 68-69, 71-75, 77), comprising:

mounting (228, Fig. 9; ¶¶37, 59-61, 72-74, 77) a neutron source (14, 54, 114, 214, 254; Figs. 1, 7-9; ¶¶23-30, 32-34, 36-37, 50, 52, 56-63, 72-74, 77) adjacent the material specimen (12, 112, 212);

mounting (Fig. 9; ¶¶ 38, 40, 66-69) a detector (16, 30, 32, 116, 130, 216, 230; Figs. 1, 4, 6-9; ¶¶23-24, 36, 38-42, 44-46, 49, 52-54, 56, 60, 65-72, 74-77) adjacent the material specimen (12, 112, 212);

bombarding (232; Fig. 9; ¶¶23-24, 30-31, 34, 37, 50, 56, 59-61,73) the material specimen (12, 112, 212) with neutrons (Figs. 1, 7-9; ¶¶30-34, 37, 50, 52, 56-63, 73) from the neutron source (14, 54, 114, 214, 254) to create prompt gamma rays (Figs. 1, 7-9; ¶¶23-24, 27, 30, 34, 37-39, 41, 43-45, 49-53, 57, 60-61, 63, 66-67) within the material specimen (12, 112, 212), some of the prompt gamma rays being emitted from the material specimen (12, 112, 212), some of the prompt gamma rays resulting in the formation of positrons (Figs. 1, 7-9; ¶¶23-25, 27, 30-31, 34, 37, 43, 50-52, 56-57, 60-61, 63) within the material specimen (12, 112, 212) by pair production (18, 118, 218; Figs. 1, 7-9; ¶¶23, 28, 30-31, 37, 50, 52, 57, 60-61, 63);

collecting (70, 82, 234; Figs. 3, 6, 9; ¶75) positron annihilation data (22, 122, 222; Figs. 1, 3, 4, 6-9; ¶¶ 38, 42-45, 49, 53-54, 67, 70-71, 75-77) by detecting with the detector (16, 30, 32, 116, 130, 216, 230) a plurality of emitted annihilation gamma rays (Figs. 1, 7-9); ¶¶23-24, 30, 38-39, 41, 43, 45, 51-53, 57, 66-67) resulting from the annihilation (¶¶24,

30, 43-44, 57) of positrons, the detector (16, 30, 32, 116, 130, 216, 230) producing the positron annihilation data (22, 122, 222);

storing (¶¶ 71, 76) the positron annihilation data (22, 122, 222) on a data storage system (225; Fig. 8; ¶¶ 71, 76) for later retrieval and processing; and

continuing to collect and store positron annihilation data (22, 122, 222), the continued collected and stored positron annihilation data (22, 122, 222) being indicative of an accumulation of lattice damage (¶¶24-26, 43, 47, 60-61, 67-69, 71, 74, 77) over time.

13. The method of claim 12, further comprising:

collecting prompt gamma ray data (20, 120, 220) by detecting with the detector (16, 30, 32, 116, 130, 216, 230) a plurality of emitted prompt gamma rays, the detector (16, 30, 32, 116, 130, 216, 230) producing the prompt gamma ray data (20, 120, 220) ;

storing prompt gamma ray data (20, 120, 220) on the data storage system (225) for later retrieval and processing; and

continuing to collect and store prompt gamma ray data (20, 120, 220) , the continued collected and stored prompt gamma ray data (20, 120, 220) being indicative of an accumulation of lattice damage over time.

14. The method of claim 12, wherein said mounting (228) a neutron source (14, 54, 114, 214, 254) adjacent the material specimen (12, 112, 212) comprises mounting (228) the neutron source (14, 54, 114, 214, 254) to the material specimen (12, 112, 212).

15. The method of claim 14, wherein said mounting a detector (16, 30, 32, 116, 130, 216, 230) adjacent the material specimen (12, 112, 212) comprises mounting the detector (16, 30, 32, 116, 130, 216, 230) to the material specimen (12, 112, 212).

16. The method of claim 15, further comprising positioning a shield (56, 256; Figs. 1, 8; ¶¶33, 62) adjacent the neutron source (14, 54, 114, 214, 254) to absorb stray neutrons.

17. The method of claim 16, further comprising positioning a moderator (60, 260; Figs. 1, 8; ¶¶34-36, 63-65) between the neutron source (14, 54, 114, 214, 254) and the material specimen (12, 112, 212).

18. The method of claim 12, wherein mounting (228) a neutron source (14, 54, 114, 214, 254) adjacent the material specimen (12, 112, 212) comprises mounting (228) an isotopic neutron source (54, 254) adjacent the material specimen (12, 112, 212).

19. The method of claim 12, wherein continuing to collect and store positron annihilation data (22, 122, 222) is performed while the material specimen (12, 112, 212) is in service.

21. The method of claim 12, further comprising:

retrieving stored positron annihilation data (22, 122, 222); and

processing (84, 236; Figs. 6, 9; ¶¶26, 42, 47, 49, 53-54, 67, 70, 75, 77) the positron annihilation data (22, 122, 222) in accordance with a Doppler-broadening algorithm (40; Figs. 2, 6; ¶¶26-27, 38, 42, 47-49, 51, 70, 75) to produce output data indicative of an accumulation of lattice damage over time.

23. The method of claim 12, further comprising removing the neutron source (14, 54, 114, 214, 254) before collecting positron annihilation data (22, 122, 222).